Fenaksite $\mathbf{(K,Na,Ca)_4(Fe^{2+},Fe^{3+},Mn^{2+})_2Si_8O_{20}(OH,F)}$

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As grains up to 4 cm.

Physical Properties: *Cleavage:* Two intersecting at an angle of 122°. Hardness = 5–5.5 D(meas.) = 2.744 D(calc.) = 2.74

Optical Properties: Transparent to translucent. *Color:* Light rose. *Luster:* Pearly on cleavages.
Optical Class: Biaxial (+) [*sic*]. *Orientation:* $Z = b$; $Z \wedge$ cleavage 1 = 20°; $Y \wedge$ cleavage 2 = 49°; $X \wedge$ cleavage 2 = 8°. $\alpha = 1.541$ $\beta = 1.560$ $\gamma = 1.567$ 2V(meas.) = 84° 2V(calc.) = [61°]

Cell Data: *Space Group:* $P\bar{1}$. $a = 6.98$ $b = 8.24$ $c = 9.98$ $\alpha = 114.20°$ $\beta = 80.22°$ $\gamma = 115.60°$ Z = 2

X-ray Powder Pattern: Khibiny massif, Russia.
3.03 (100), 3.55 (70), 3.44 (70), 2.46 (70), 2.88 (60), 2.71 (60), 1.875 (60)

Chemistry:

	(1)		(1)
SiO_2	60.54	CaO	0.74
TiO_2	0.04	Na_2O	7.51
Al_2O_3	0.66	K_2O	11.71
Fe_2O_3	1.54	F	0.47
FeO	12.49	H_2O^+	0.67
MnO	2.49	H_2O^-	0.78
MgO	0.70	$-O = F_2$	0.20
		Total	100.14

(1) Khibiny massif, Russia.

Occurrence: In pegmatites associated with an ijolite-urtite intrusion in a differentiated alkalic massif.

Association: Albite, nepheline, "aegirine-augite," delhayelite, eudialyte.

Distribution: On Mts. Rasvumchorr and Yukspor, Khibiny massif, Kola Peninsula, Russia.

Name: For *Fe, Na, K, Si* in the composition.

Type Material: Geology Museum, Kola Branch, Academy of Sciences, Apatity, 1780; Vernadsky Geological Museum, Moscow, 46626; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 61123, 61124, 62013.

References: (1) Dorfman, M.D., D.D. Rogachev, Z.I. Goroshchenko, and A.V. Mokretsova (1959) Fenaksite–a new mineral. Trudy Mineral. Muzeya Akad. Nauk SSSR, 152–157 (in Russian). (2) (1960) Amer. Mineral., 45, 252–253 (abs. ref. 1). (3) (1960) Mineral. Abs., 14, 414 (abs. ref. 1). (4) Golovachev, V.P., Y.N. Drozdov, E.A. Kuz'min, and N.V. Belov (1970) The crystal structure of phenaxite [fenaksite] $FeNaK(Si_4O_{10}) - KFeNa(Si_4O_{10})$. Doklady Acad. Nauk SSSR, 194, 818–820 (in Russian).